REMARKS

Claims 1-78 are now pending in the application. Minor amendments have been made to the claims to overcome the rejections of the claims under 35 U.S.C. § 112. The amendments to the claims are not narrowing amendments. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 112

Claims 14, 41, and 66 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. This rejection is respectfully traversed.

In response to this rejection Applicants amended Claims 14, 41, and 66 to depend from Claims 2, 32, and 57, respectively, thereby providing proper antecedent basis for the terms of these Claims.

REJECTION UNDER 35 U.S.C. § 103

Claims 1-3, 6-8, 10-15, 16-19m 22-23, 25-30, 31-33, 36-42, 43-46, 50-55, 56-58, 62-67, 68-70, 73, and 78 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim et al. (U.S. Pat. No. 5,602,601) in view of El-Gamal et al. (U.S. Pat. No. 2002/0136327). This rejection is respectfully traversed.

With respect to Claim 1, Kim in view of El-Gamal does not show, teach or suggest a dimension demultiplexer or a demodulator that generates a demodulated symbol sequence by derotating a signal constellation of a received symbol sequence.

The Examiner asserts that the demultiplexer 15 and complex demultiplier/demultiplexer 18 of Kim are equivalent to a dimension demultiplexer as claimed. As best understood by Applicants, the complex demultiplexer 18 produces a phase error corrected in-phase (I) value I' and a phase error corrected quadrature (Q) value Q' using demultiplexed I and Q signals from the demultiplexer 15. The complex demultiplexer 18 applies I' and Q' signals to a slicer. The two demultiplexers 15, 18 of Kim do not appear to select a dimension, such as I or Q, of the received signal to be received in the slicer. As best understood by Applicants, El-Gamal does not appear to include a dimension demultiplexer, nor does the Examiner make such an assertion.

In contrast, the claimed dimension demultiplexer receives a dimension select signal 94 that determines whether a one-dimensional dynamic slicer 38 processes the I or Q component of the received signal. (Page 15, Paragraph [0043].) Kim does not and cannot include a dimension select signal and therefore does not include a dimension demultiplexer. Instead Kim includes a typical demultiplexer 15 that separates I and Q components of a signal and a complex demultiplexer 18 that corrects phase error in the I and Q components based on a feedback loop. The demultiplexers of Kim do not determine whether the slicer processes I *or* Q component of the received signal.

It is a longstanding rule that to establish a prima facie case of obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 180 USPQ 143 (CCPA 1974), see MPEP §2143.03. Although Kim includes multiple demultiplexers, Kim does not teach, suggest, or disclose that the

demultiplexers are dimension demultiplexers as in recited in Claim 1. Claim 1 and the cited prior art therefore differ for at least this reason.

Further, the Examiner asserts that FIGs. 1-5 of Kim illustrate a demodulator that generates a demodulated symbol sequence by derotating a signal constellation. The Examiner uses FIG. 1 as an example of a demodulator processing a signal received from an antenna. Kim does not use the terms demodulator or derotate in FIG. 1 and the related disclosure. It appears that the Examiner is referring to the tuner 1, which receives the signal from the antenna. However, nowhere in Kim is it taught, suggested, or disclosed that the tuner 1 derotates a constellation of a received signal.

Typical constellation processing includes examining a received symbol, which may have been corrupted by the channel or the receiver. A point on the constellation diagram closest to that of the received symbol is then selected as an estimate of what was actually transmitted. Typical constellation demodulation does not appear to include constellation derotation. Assuming the tuner 1 receives and demodulates the signal, there is no evidence that the tuner 1 derotates the constellation as claimed. In contrast, the demodulator of claim 1 derotates the constellation by, for example, multiplying the received symbol sequence by a conjugate of the channel response. (Page 9, Paragraph [0031].) Therefore Claim 1 and the cited prior art differ for at least this additional reason.

Therefore, Claim 1 is allowable for at least these reasons. Claims 16, 31, 43, 56, and 68 are allowable for at least similar reasons as Claim 1. Claims 2-15, 17-30, 32-42, 44-55, 57-67, and 67-78 ultimately depend from Claims 1, 16, 31, 43, 56, and 68 and are allowable for at least similar reasons.

ALLOWABLE SUBJECT MATTER

The Examiner states that Claims 4-5, 20-21, 34-35, 47-48, 59-60, 71-72 would be allowable if rewritten in independent form. Applicants reserve the right to amend these Claims into allowable form at a later date if needed.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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